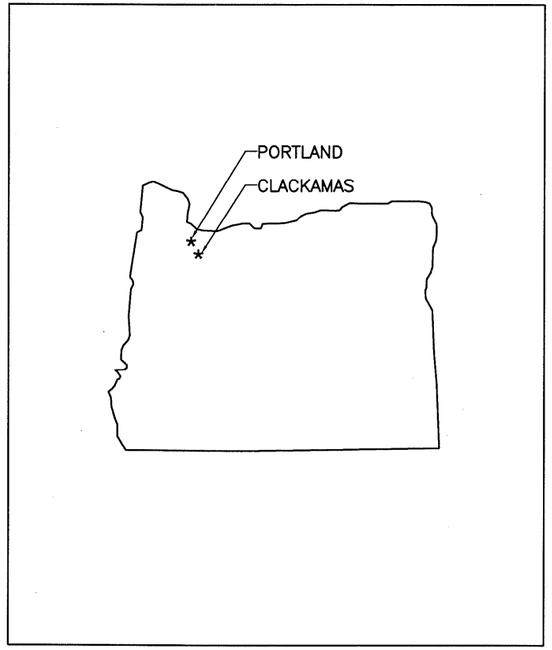
Attachment D

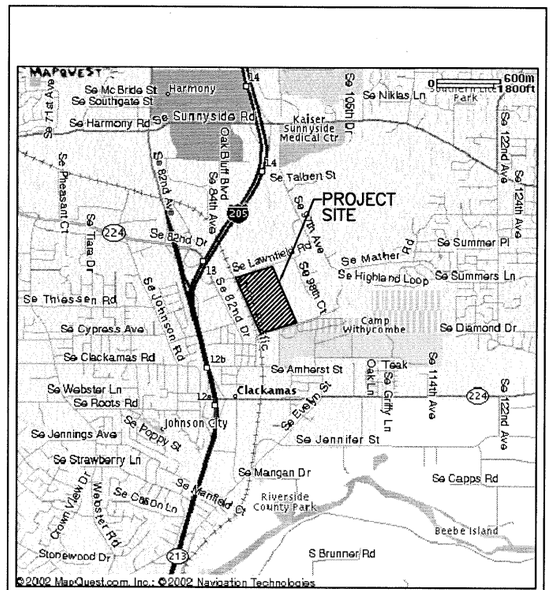
Drawings
Groundwater Circulation Wells & Soil Cap Remedial Design

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY
GROUNDWATER CIRCULATION WELLS & SOIL CAP
REMEDIAL DESIGN

VICINITY MAP



LOCATION MAP



DRAWING LIST

GENERAL

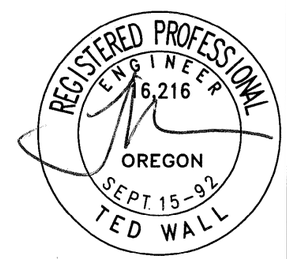
G01 COVER SHEET
G02 GENERAL NOTES, SYMBOLS, & ABBREVIATIONS
G03 EXISTING CONDITIONS

SOIL CAP

C01 SITE PREPARATION, EROSION CONTROL & DEMOLITION PLAN
C02 EXCAVATION & SUBBASE GRADING PLAN
C03 FINAL GRADE
C04 SOIL CAP DETAILS
C05 SOIL CAP SECTIONS
C06 CROSS SECTIONS
W01 WETLANDS PLANTING

GROUNDWATER CIRCULATION WELLS

S01 MONITORING WELL AND GCW SYSTEM LAYOUT (WITHOUT CAP)
S02 GCW TREATMENT SYSTEM
S03 GCW DETAILS
S04 WELL CONSTRUCTION DETAILS
S05 MONITORING WELL & GCW SYSTEM LOCATIONS (WITH CAP)
E01 UNDERGROUND POWER & TELEPHONE SITE PLAN
E02 ELECTRICAL ONE LINE DIAGRAM



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No.	DATE	BY	REVISION
B	3/21/03	JMP	FINAL DESIGN SUBMITTAL
A	3/03/03	JMP	PRE-FINAL DESIGN SUBMITTAL

JOB No. 33754167	DESIGNED: EIB	PROJ. ENGINEER: EIB
SCALE: NONE	DRAWN BY: JMP	APPROVED BY: TW
	CHECKED BY: EIB	DATE: MARCH 2003

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US EPA REGION 10

GCW & SOIL CAP
REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

COVER SHEET

DRAWING NUMBER: G01
CAD FILE NUMBER: G01
SHEET: 1 OF 17
REV.: B

GENERAL NOTES

GCW NOTES

1. STRUCTURAL, ELECTRICAL, AND MECHANICAL COMPONENTS SHALL BE DESIGNED FOR SEISMIC ZONE 3 AND IN COMPLIANCE WITH STATE AND LOCAL CODES AS APPLICABLE.
2. THE BUILDING FOUNDATIONS FOR FORMER PLANTS 1, 2, 3, AND 4 WERE REMOVED DURING THE PREVIOUS REMEDIAL ACTION.
3. TRENCH LINES ARE DIAGRAMMATIC.
4. THE EXISTING GROUND SURFACE IS REFERRED TO AS "EXISTING SURFACE" AND THE TOP OF THE 2 FT CAP IS REFERRED TO AS THE "FINAL SURFACE" THROUGHOUT THESE DRAWINGS.
5. EQUIPMENT ENCLOSURES GREATER THAN 120 SQUARE FT WILL REQUIRE A CLACKAMAS COUNTY BUILDING PERMIT.
6. EPA MAY CHOOSE TO ALTER THE WELL DEPTHS SHOWN ON S03 BASED ON SITE SPECIFIC CONDITIONS AS DETERMINED DURING WELL DRILLING. ACTUAL DEPTH MAY BE ± 5 FT FROM THAT SHOWN.
7. ALL TRENCHES THAT CROSS UNDER DRIVEWAYS OR PARKING LOTS SHALL BE BACKFILLED WITH CONTROLLED DENSITY FILL MEETING ODOT SPECIFICATION 00442.
8. CONTRACTOR SHALL SAW CUT ALL TRENCHES UNDER ASPAHLT OR CONCRETE ON ODOT PROPERTY.
9. CONTRACTOR SHALL NOT INTRUDE INTO NATIVE SOILS AFTER SOIL CAP PLACEMENT.
10. CONTRACTOR IS RESPONSIBLE FOR INTEGRITY OF PIPES INSTALLED IN TRENCHES.
11. ENGINEER SHALL STAKE GCW LOCATIONS PRIOR TO SOIL CAP PLACEMENT.
12. SOIL REMOVED FROM TRENCHES SHALL REMAIN ONSITE. CONTRACTOR SHALL SPREAD SOIL NEXT TO TRENCH PRIOR TO SOIL CAP PLACEMENT.

SOIL CAP NOTES

1. SOIL CAP SHALL BE 2 FT IN THICKNESS AND SHALL FOLLOW EXISTING CONTOURS OF THE SITE, EXCEPT WHERE ALTERED ON SUB-BASE GRADING PLAN.
2. SOIL CAP TO BLEND INTO GRAVEL ROAD AT EDGES OF SOIL CAP.
3. EXISTING ONSITE PARKING LOT TO REMAIN EXCEPT AS SHOWN ON THE DEMOLITION PLAN. REMAINING PARKING LOT SHALL NOT BE CAPPED.
4. ONSITE ASPHALT ROADS TO REMAIN EXCEPT AS SHOWN ON DEMOLITION PLAN. SOIL CAP SHALL COVER REMAINING ONSITE ROADS.
5. WOODCHIP BERM IN NORTHWEST AND SOUTHWEST CORNERS OF THE SITE WILL REMAIN IN PLACE. BERM HEIGHT SHALL BE INCREASED TO BE 2 FT HIGHER THAN THE FINAL ELEVATION OF THE SOIL CAP BY NARROWING EXISTING BERM WIDTH.
6. CONTRACTOR SHALL FIELD VERIFY EXTENT OF WOODCHIP BERM WITH OWNER.
7. THE 2 FT SOIL CAP IS NOT REQUIRED ON TOP OF THE DIRT BERM. SOIL CAP SHALL BLEND INTO THE SOIL BERM ALONG THE WEST PROPERTY BOUNDARY.
8. CONTRACTOR SHALL NOT REMOVE SOIL BERM DURING SITE CLEARING ACTIVITIES OR USE IT AS A CAP SOIL SOURCE.
9. CONTRACTOR SHALL FIELD VERIFY EXTENT OF SOIL BERM WITH OWNER AFTER CLEARING ALL VEGETATION FROM BERM.
10. CONTRACTOR SHALL EXERT SAME COMPACTIVE EFFORT FOR SOIL CAP ALONG WOODCHIP BERM, THOUGH CONTRACTOR SHALL NOT BE HELD RESPONSIBLE FOR ATTAINING 90% COMPACTION ALONG THE SOIL CAP/WOOD BERM INTERFACE.
11. THE EXISTING FENCE IS TO REMAIN EXCEPT AS SHOWN ON DEMOLITION PLAN. CONTRACTOR SHALL MAKE ANY REPAIRS NECESSARY TO RESTORE FENCE TO PREVIOUS CONDITION, FOR ANY DAMAGE OCCURING DURING THIS PROJECT. REPAIRS SHALL BE AT NO COST TO OWNER.
12. NEW FENCE TO MATCH EXISTING.
13. SOIL CAP TO BE HYDROSEEDED WITH NATIVE GRASS EROSION CONTROL MIX PER 02900.
14. CONTROL LOCATIONS IN WETLANDS MITIGATION AREA WILL BE SURVEYED BY ENGINEER, AT OWNERS EXPENSE, AFTER EXCAVATION AND AFTER SOIL PLACEMENT TO VERIFY ELEVATIONS AS SHOWN IN TABLE ON C02 AND C03.
15. FILL AREA RESULTING FROM WETLANDS EXCAVATION WILL BE SURVEYED BY ENGINEER PRIOR TO PLACEMENT OF SOIL CAP AT OWNERS EXPENSE.
16. SOIL CAP HAUL TRUCKS SHALL TRAVEL ONLY ON IMPORTED CAP SOIL OR ON EXISTING ASPHALT ROADS.
17. AT TWO FOOT DEPTH SOIL CAP VOLUME IS EQUAL TO 95,334 CUBIC YARDS IN PLACE.
18. WETLANDS MITIGATION AREA EXCAVATION VOLUME IS EQUAL TO 6,357 CUBIC YARDS.
19. AT SIX INCH DEPTH, WETLANDS MITIGATION AREA TOP SOIL VOLUME IS EQUAL TO 1,556 CUBIC YARDS.
20. DEMOLISHED ASPHALT SHALL BE PLACED ONSITE IN A SINGLE LAYER AS IDENTIFIED ON THE DEMOLITION PLAN.
21. CHIPPED VEGETATION SHALL BE PLACED ON TOP OF THE COMPLETED SOIL CAP IN WINDROWS AS IDENTIFIED ON THE FINAL GRADING PLAN.
22. NO VEHICLE TRAFFIC ON WELL TRENCHES IS ALLOWED PRIOR TO CAP PLACEMENT.

SYMBOLS

- EXISTING SHALLOW UPPER AQUIFER WELL (0-20 FEET BGS)
- EXISTING INTERMEDIATE UPPER AQUIFER WELL (20-60 FEET BGS)
- EXISTING LOWER UPPER AQUIFER WELL (60-110 FEET BGS)
- EXISTING LOWER AQUIFER WELL (115 FEET BGS)
- EXISTING SHALLOW UPPER AQUIFER PIEZOMETER (0-20 FEET BGS)
- EXISTING INTERMEDIATE UPPER AQUIFER PIEZOMETER (20-60 FEET BGS)
- NEW IN SITU AIR STRIPPING EQUIPMENT ENCLOSURE
- NEW IN SITU AIR STRIPPING WELL (BOTTOM AT 46 FEET BGS)
- NEW IN SITU AIR STRIPPING WELL (BOTTOM AT 66 FEET BGS)
- NEW SHALLOW UPPER AQUIFER WELL (0-20 FEET BGS)
- NEW INTERMEDIATE UPPER AQUIFER WELL (0-40 FEET BGS)
- GCW SYSTEM UNDERGROUND PIPING
- UNDERGROUND ELECTRICAL CONDUIT
- EXISTING FENCE
- NEW FENCE
- 110 ELEVATION CONTOUR
- RAIL ROAD
- ø DIAMETER
- TRANSFORMER
- SERVICE METER
- CIRCUIT BREAKER
- DELTA WYE
- SWITCH
- AREA LIGHT
- TEMPORARY BENCH MARK

ABBREVIATIONS

A	AMP
BGS	BELOW GROUND SURFACE
CB	CIRCUIT BREAKER
CMP	CORRUGATED METAL PIPE
FT	FEET
GCW	GROUNDWATER CIRCULATION WELL
GFCI	GROUND FAULT CIRCUIT INTERUPTER
HDPE	HIGH DENSITY POLY-ETHYLENE
HOA	HAND, OFF, AUTO
H.V.	HIGH VOLTAGE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
KVA	KILOVOLT AMPERE
KWH	KILOWATT HOUR
M	MOTOR
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOC.
NTS	NOT TO SCALE
OD	OUTER DIAMETER
O/L	OVER LOAD
P	POLE
PVC	POLYVINYL CHLORIDE
REF	REFERENCE
TBD	TO BE DETERMINED
U/G	UNDERGROUND
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
XFMR	TRANSFORMER

REGISTERED PROFESSIONAL ENGINEER 16,216 OREGON SEPT. 15-92 TED WALL

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JOB No. 33754167 | DESIGNED: EIB | PROJ. ENGINEER: EIB
SCALE: NONE | DRAWN BY: JMP | APPROVED BY: TW
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NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS

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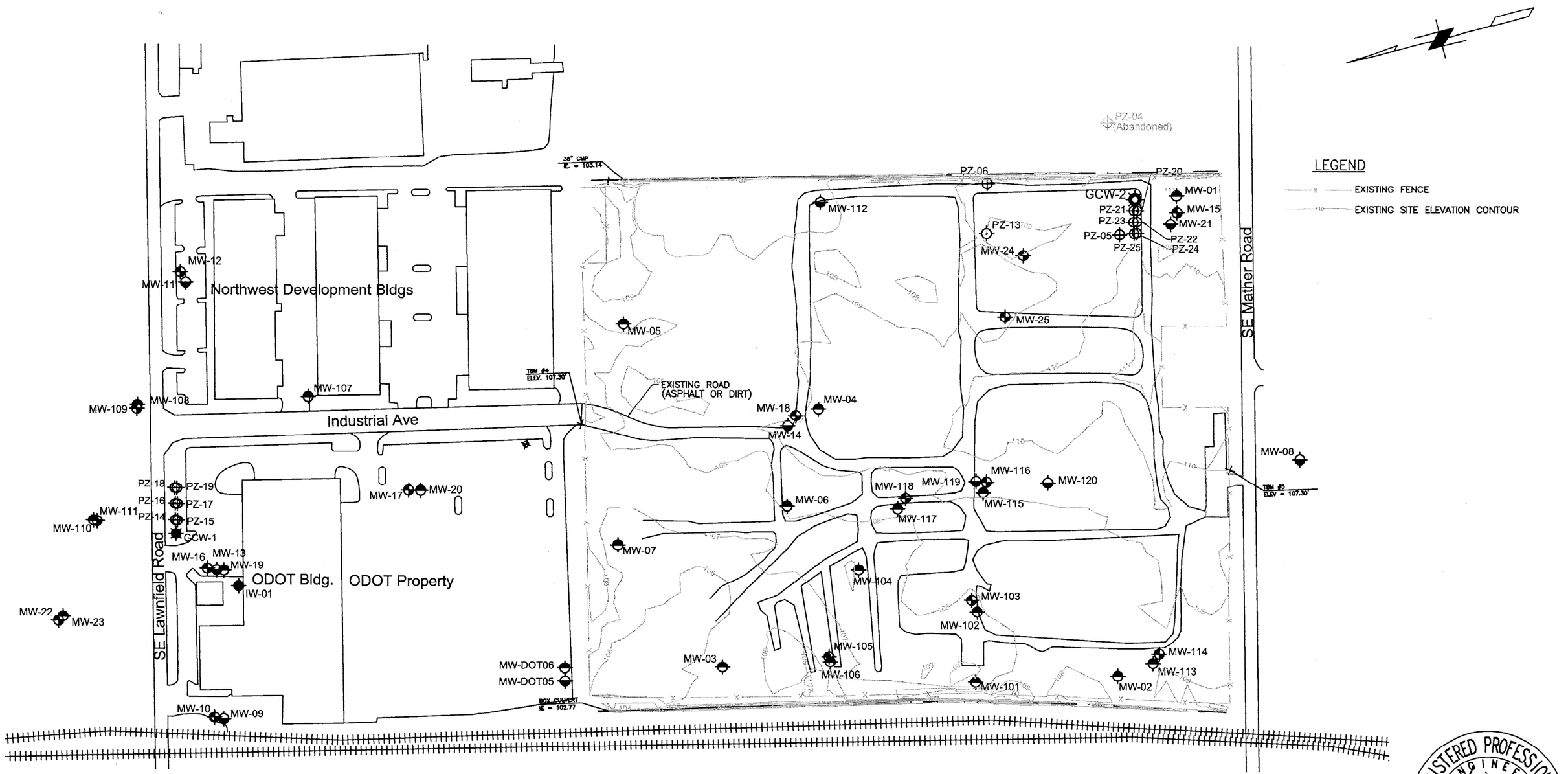
CAD FILE NUMBER: G02
SHEET: 2 OF 17 | REV. B



REGISTERED PROFESSIONAL ENGINEER
16216
OREGON
SEPT. 15-92
TED WALL
EXPIRES: 6/30/04

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GCW & SOIL CAP
REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

EXISTING CONDITIONS

DRAWING NUMBER:	G03
CAD FILE NUMBER:	G03
SHEET: 3 OF 17	REV. B

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SE 98th Ave

DEMOLISH FENCE ALONG WETLANDS MITIGATION AREA AND BUFFER

PZ-04 (Abandoned)

PZ-06

PZ-20

MW-01

GCW-2

MW-15

PZ-21

PZ-23

MW-21

PZ-05

PZ-22

PZ-25

PZ-24

MW-112

PZ-13

MW-24

MW-25

SE Mather Road

MW-12

MW-11

Northwest Development Bldgs

MW-05

REMOVE ASPHALT

MW-109

MW-108

MW-107

Industrial Ave

MW-18

MW-04

MW-14

20'

MW-08

MW-116

MW-120

MW-118

MW-119

MW-115

MW-06

MW-117

REMOVE ASPHALT

10'

PZ-18

PZ-19

PZ-16

PZ-17

MW-111

PZ-14

PZ-15

MW-110

GCW-1

MW-17

MW-20

MW-16

MW-13

MW-19

ODOT Bldg.

ODOT Property

IW-01

MW-07

CONTRACTOR TRAILER & PARKING AREA

ASPHALT DISPOSAL AREA

MW-104

MW-103

MW-22

MW-23

SE Lawnfield Road

WOODCHIP BERM (APPROXIMATE)

MW-102

WOODCHIP BERM (APPROXIMATE)

EXTEND TO BERM

MW-105

SOIL BERM (APPROXIMATE)

MW-114

MW-03

MW-106

MW-113

MW-DOT06

MW-DOT05

MW-101

MW-02

MW-10

MW-09

EXTEND TO BERM

LEGEND

SILT FENCE

200 0 200

SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER 16216 OREGON SEPT. 15-92 TED WALL

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GCW & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

SITE PREPARATION, EROSION CONTROL & DEMOLITION PLAN

DRAWING NUMBER: C01

CAD FILE NUMBER: C01

SHEET: 4 OF 17

REV. B

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WETLANDS EXCAVATION
BASE EL. 103'

WETLANDS EXCAVATION
SPOIL SITE AREA

SE Mather Road

TBM #4
ELEV. 107.30'

TBM #5
ELEV = 107.30'

BOX CULVERT
IE = 102.77

MW-01 MW-02 MW-03 MW-04 MW-05 MW-06 MW-07 MW-12 MW-14 MW-15 MW-18 MW-21 MW-24 MW-25 MW-101 MW-102 MW-103 MW-104 MW-105 MW-106 MW-107 MW-108 MW-109 MW-110 MW-111 MW-112 MW-113 MW-114 MW-115 MW-116 MW-117 MW-118 MW-119 MW-120 MW-DOT05 MW-DOT06 PZ-05 PZ-13

LEGEND

- EXISTING FENCE
- EXISTING SITE ROADS
- 110 ELEVATION CONTOUR
- ELEVATION CONTROL POINT

ELEVATION CONTROL POINTS	
EASTING	NORTHING
7672205.57	645115.43
7672134.63	645088.42
7672192.62	644918.63
7672243.28	644771.89
7672313.33	644796.42

120 0 120

SCALE IN FEET

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16,216
OREGON
SEPT 15-92
TED WALL

EXPIRES: 6/30/04

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REMEDIAL DESIGN

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EXCAVATION & SUBBASE GRADING PLAN

DRAWING NUMBER:	
C02	
CAD FILE NUMBER:	
C02	
SHEET: 5 OF 17	REV. B

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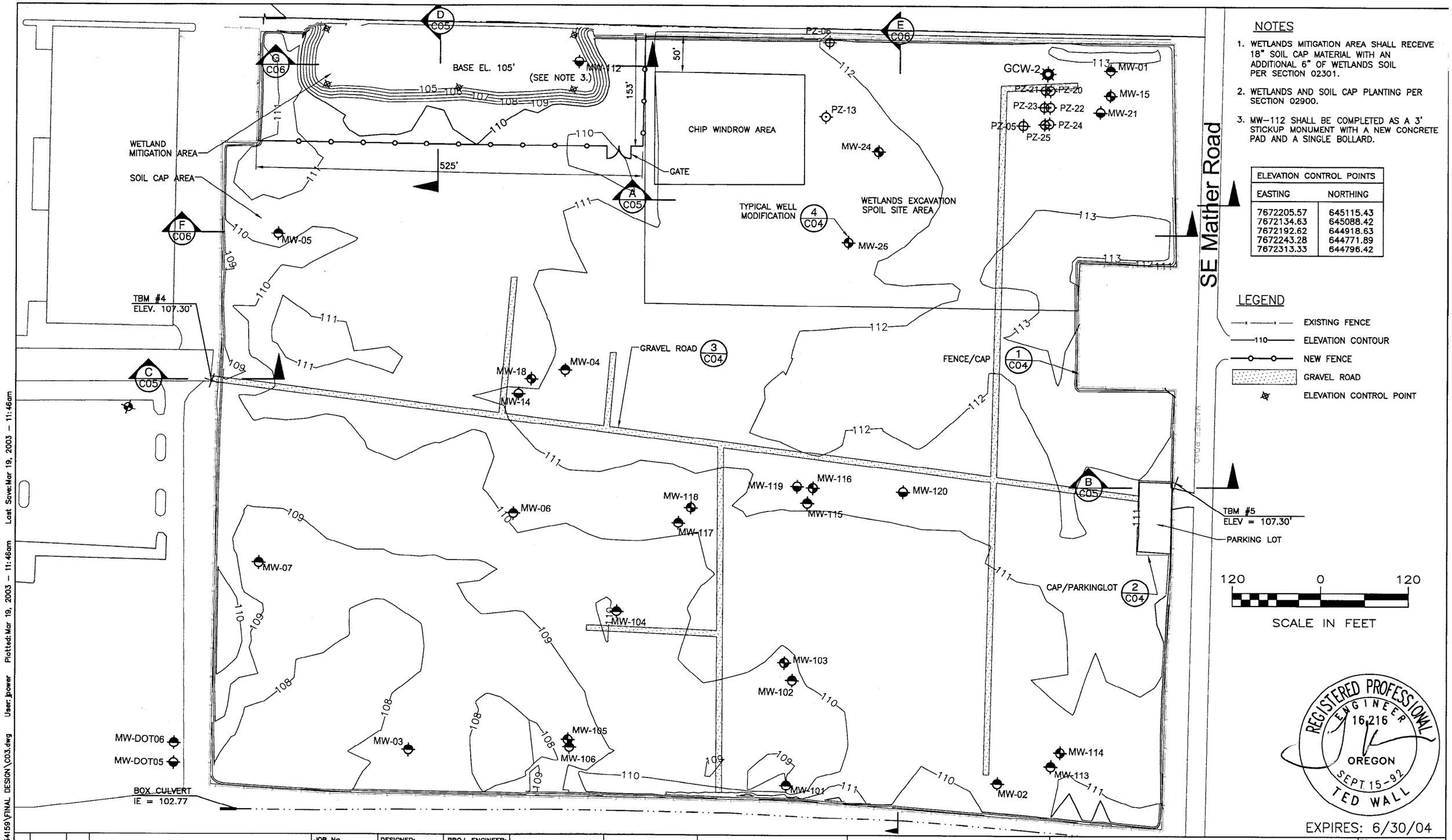

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A	3/03/03	CAS	PRE-FINAL DESIGN SUBMITTAL

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GCW & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

FINAL GRADE

DRAWING NUMBER: C03
CAD FILE NUMBER: C03
SHEET: 6 OF 17
REV.: B

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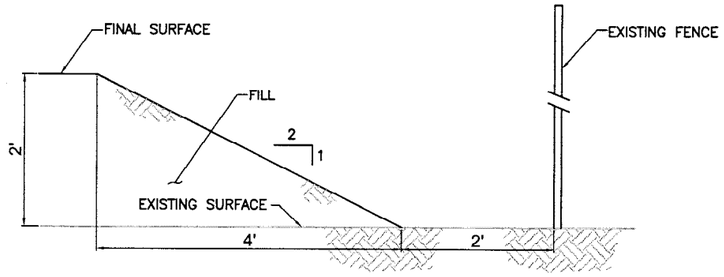
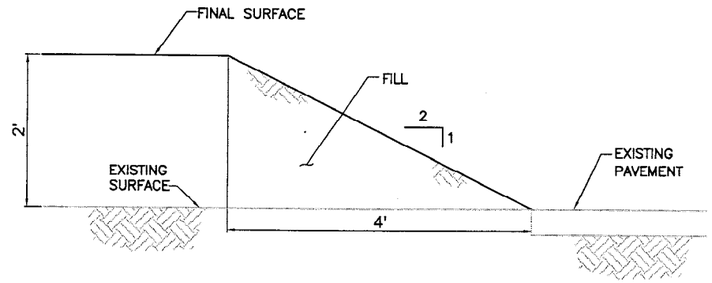
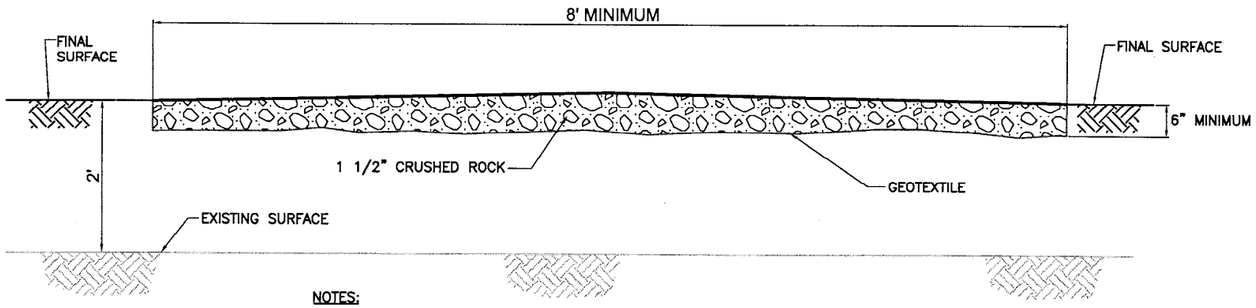


TYPICAL FENCE/CAP DETAIL (1 / C03)
N.T.S.



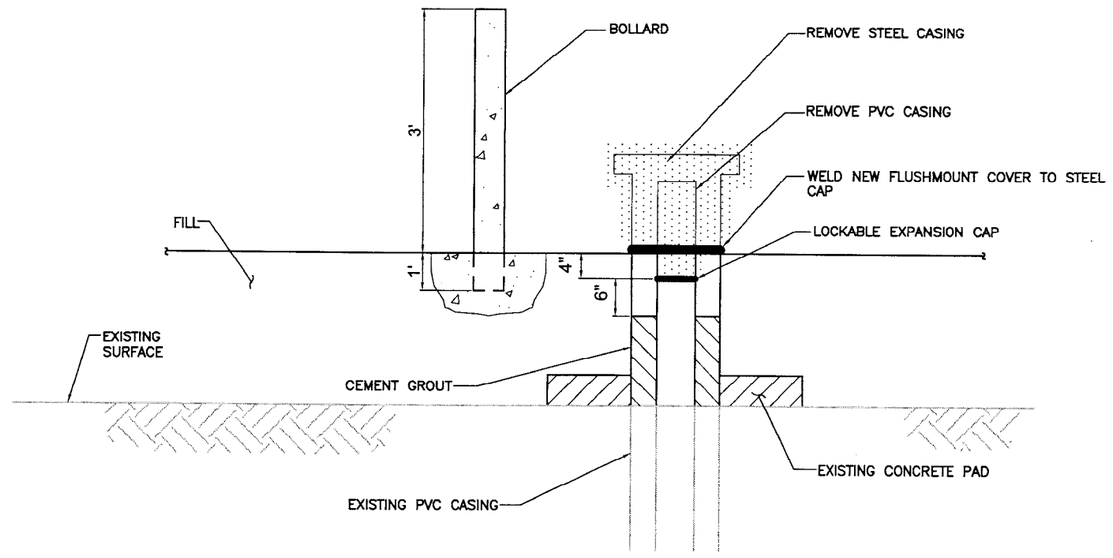
TYPICAL PARKING LOT DETAIL (2 / C03)
N.T.S.



NOTES:

1. CRUSHED ROCK TO BE 1 1/2" MINUS CRUSHED ROCK.
2. CRUSHED ROCK TO BE COMPACTED TO 95% OF ASTM 1557 (MODIFIED PROCTOR METHOD).
3. ROAD TO FOLLOW EXISTING GRADES ALONG ALIGNMENT SHOWN ON PLANS.

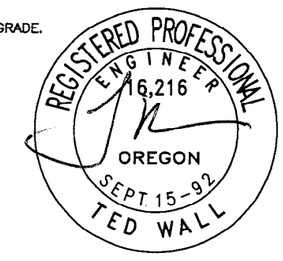
GRAVEL ROAD DETAIL (3 / C03)
N.T.S.



NOTES:

1. REMOVE EXISTING BOLLARDS.
2. PLACE 2' SOIL WITHIN 5' RADIUS AND HAND COMPACT TO 90%.
3. CUT STEEL CASING TO FINAL GRADE, CUT PVC TO 4" BELOW FINAL GRADE.
4. FILL ANNULUS WITH CEMENT GROUT TO 6" BELOW TOP OF PVC.
5. WELD NEW FLUSH MOUNT MONUMENT TO STEEL CASING.
6. INSTALL 1 STEEL BOLLARD.

TYPICAL EXISTING WELL MODIFICATIONS (4 / C03)
N.T.S.



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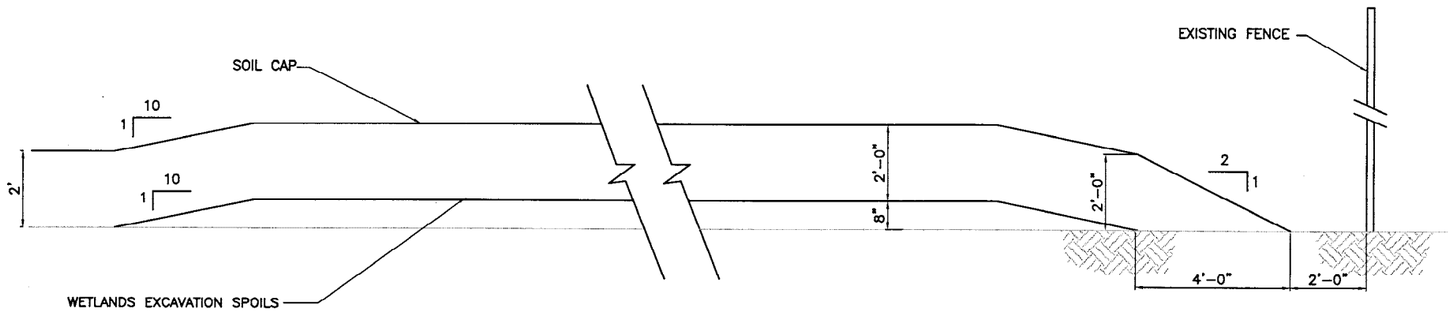
GCW & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

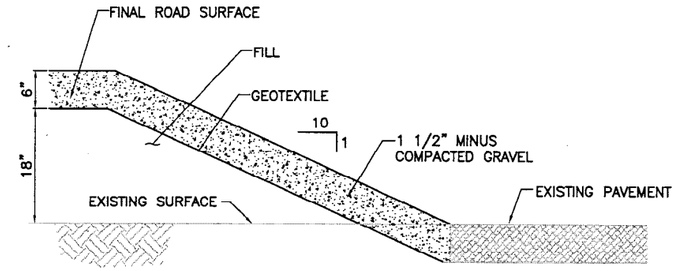
SOIL CAP DETAILS

DRAWING NUMBER:	
C04	
CAD FILE NUMBER:	
C04	
SHEET: 7 OF 17	REV. B



SOUTHEAST CORNER SECTION (A / C03)
N.T.S.

NOTE:
CONTRACTOR SHALL BLEND WETLANDS EXCAVATION SPOILS TO EXISTING GRADE ALONG FENCELINE. WETLANDS EXCAVATION SPOILS SHALL BE PLACED IN A SINGLE 8" LIFT MEETING THE COMPACTION REQUAREMENTS CONTAINED IN SECTION 02300.3.3.



SOUTH ROAD SECTION (B / C03)
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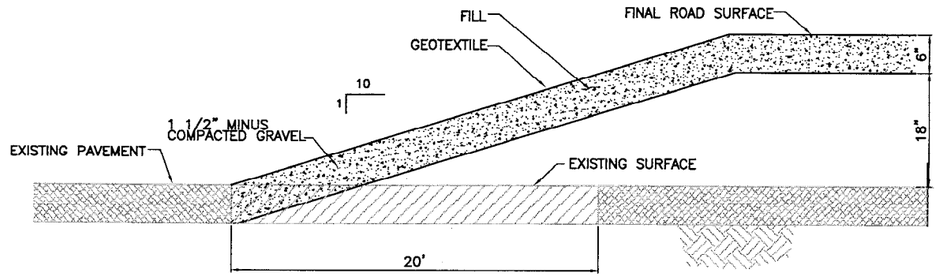
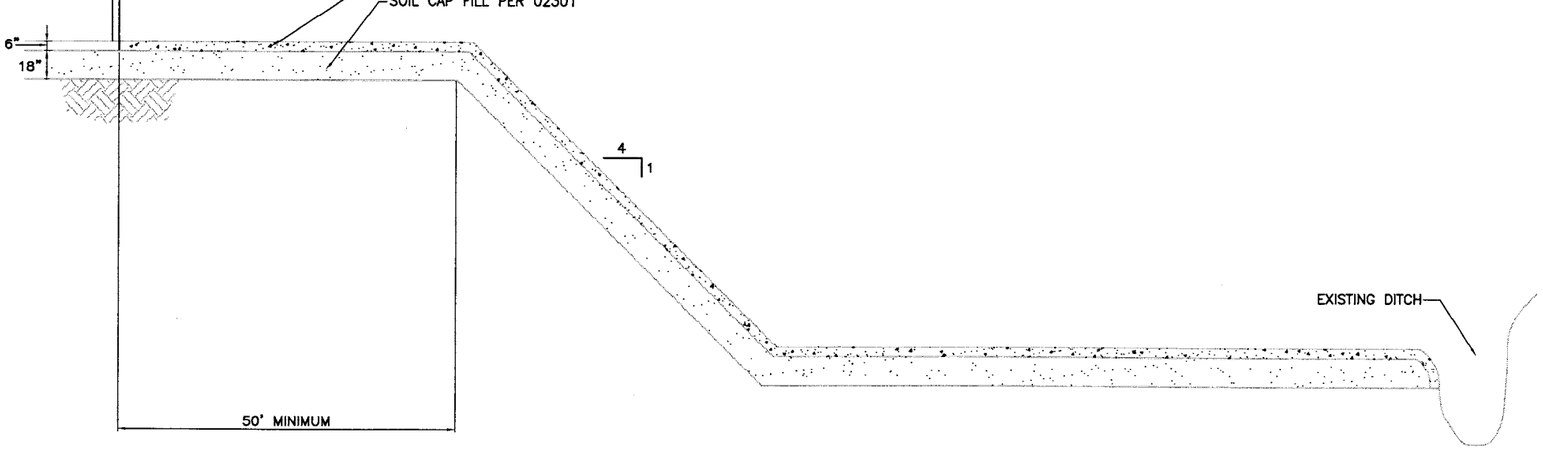


NORTH ROAD SECTION (C / C03)
N.T.S.



TYPICAL WETLAND CONSTRUCTION (D / C03)
N.T.S.

REGISTERED PROFESSIONAL ENGINEER
16,216
OREGON
SEPT. 15-92
TED WALL
EXPIRES: 6/30/04

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GCW & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

SOIL CAP SECTIONS

DRAWING NUMBER: C05
CAD FILE NUMBER: C05
SHEET: 8 OF 17
REV. B

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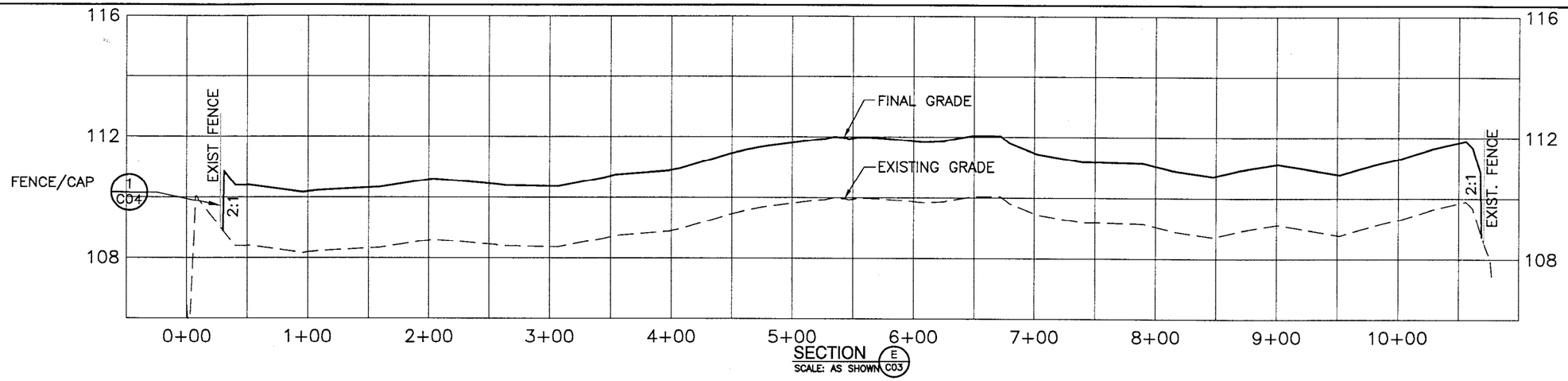

SECTION E
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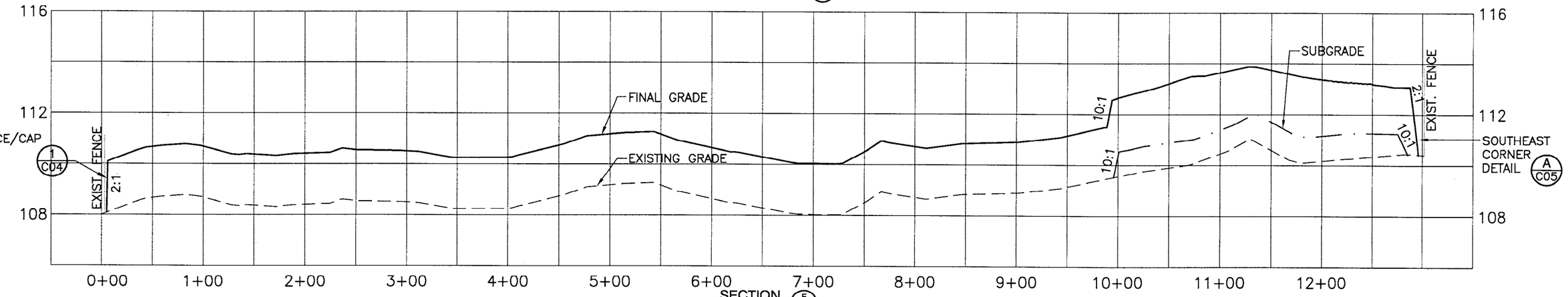

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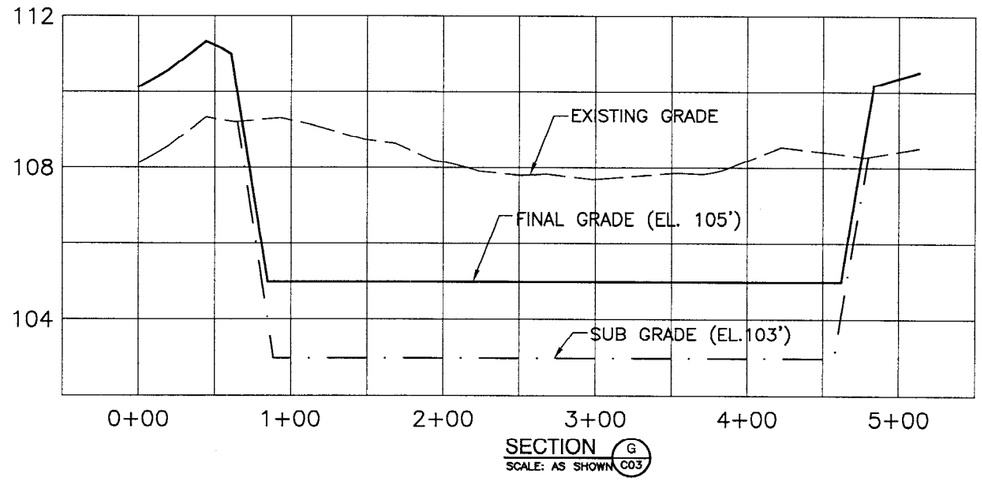

SECTION G
SCALE: AS SHOWN C03

REGISTERED PROFESSIONAL ENGINEER
16216
OREGON
SEPT 15-92
TED WALL

EXPIRES: 6/30/04

No.	DATE	BY	REVISION
B	3/21/03	JMP	FINAL DESIGN SUBMITTAL
A	3/3/03	JMP	PRE-FINAL DESIGN SUBMITTAL

JOB No. 33754167.03000	DESIGNED: EIB	PROJ. ENGINEER: EIB	
SCALE: AS NOTED	DRAWN BY: CAS	APPROVED BY: TW	
	CHECKED BY: EIB	DATE: MARCH 2003	

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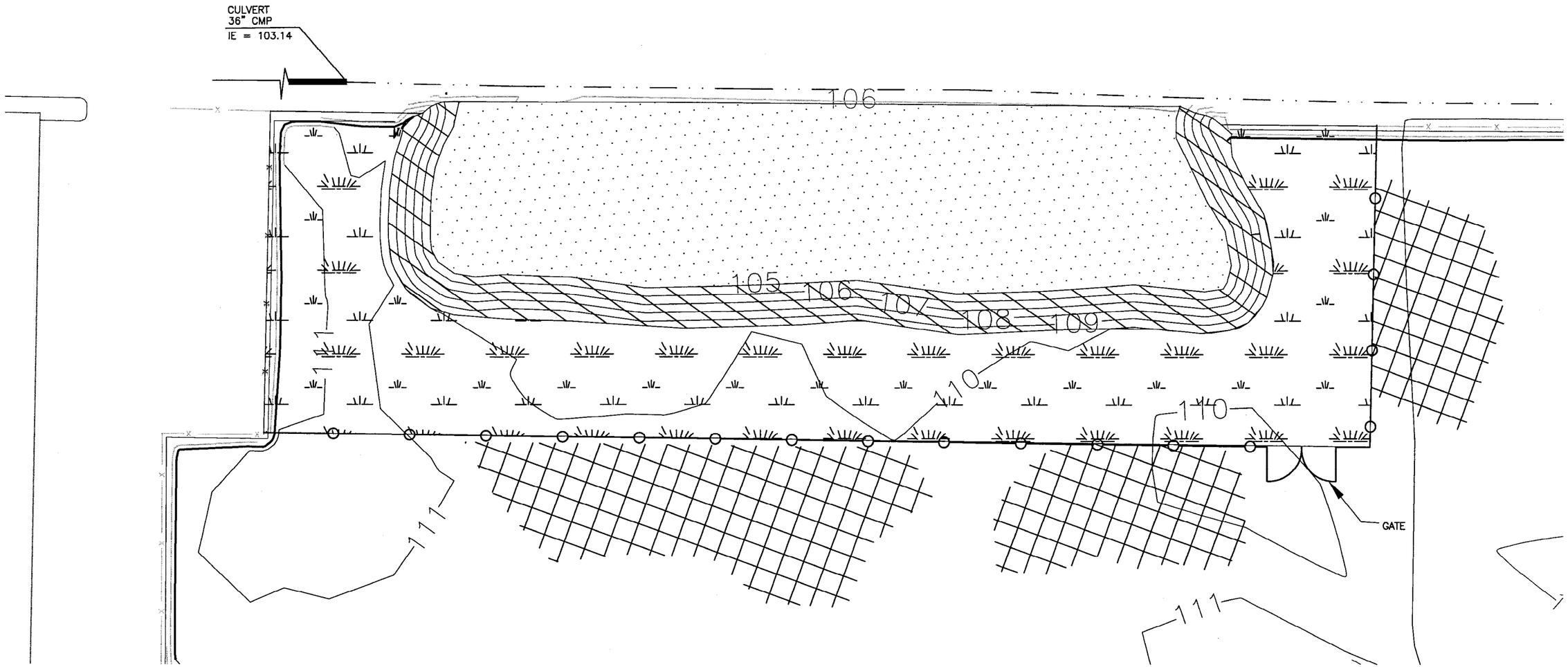
US EPA REGION 10

GCW & SOIL CAP
REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

CROSS SECTIONS

DRAWING NUMBER:	C06
CAD FILE NUMBER:	C06
SHEET: 9 OF 17	REV. B



LEGEND

- EMERGENT WETLAND
- FORESTED WETLAND
- UPLAND BUFFER
- SOIL CAP SEED MIX
- EXISTING FENCE
- NEW FENCE

50 0 50

SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
16,216
OREGON
SEPT. 15-92
TED WALL

EXPIRES: 6/30/04

No.	DATE	BY	REVISION
B	3/21/03	JMP	FINAL DESIGN SUBMITTAL
A	3/03/03	CAS	PRE-FINAL DESIGN SUBMITTAL

JOB No. 33754167	DESIGNED: EIB	PROJ. ENGINEER: EIB	
SCALE: AS SHOWN	DRAWN BY: CAS	APPROVED BY: TW	
	CHECKED BY: EIB	DATE: MARCH 2003	

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GCW & SOIL CAP
REMEDIAL DESIGN

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WETLANDS PLANTING

DRAWING NUMBER:	
W01	
CAD FILE NUMBER:	
W01	
SHEET: 10 OF 17	REV. B

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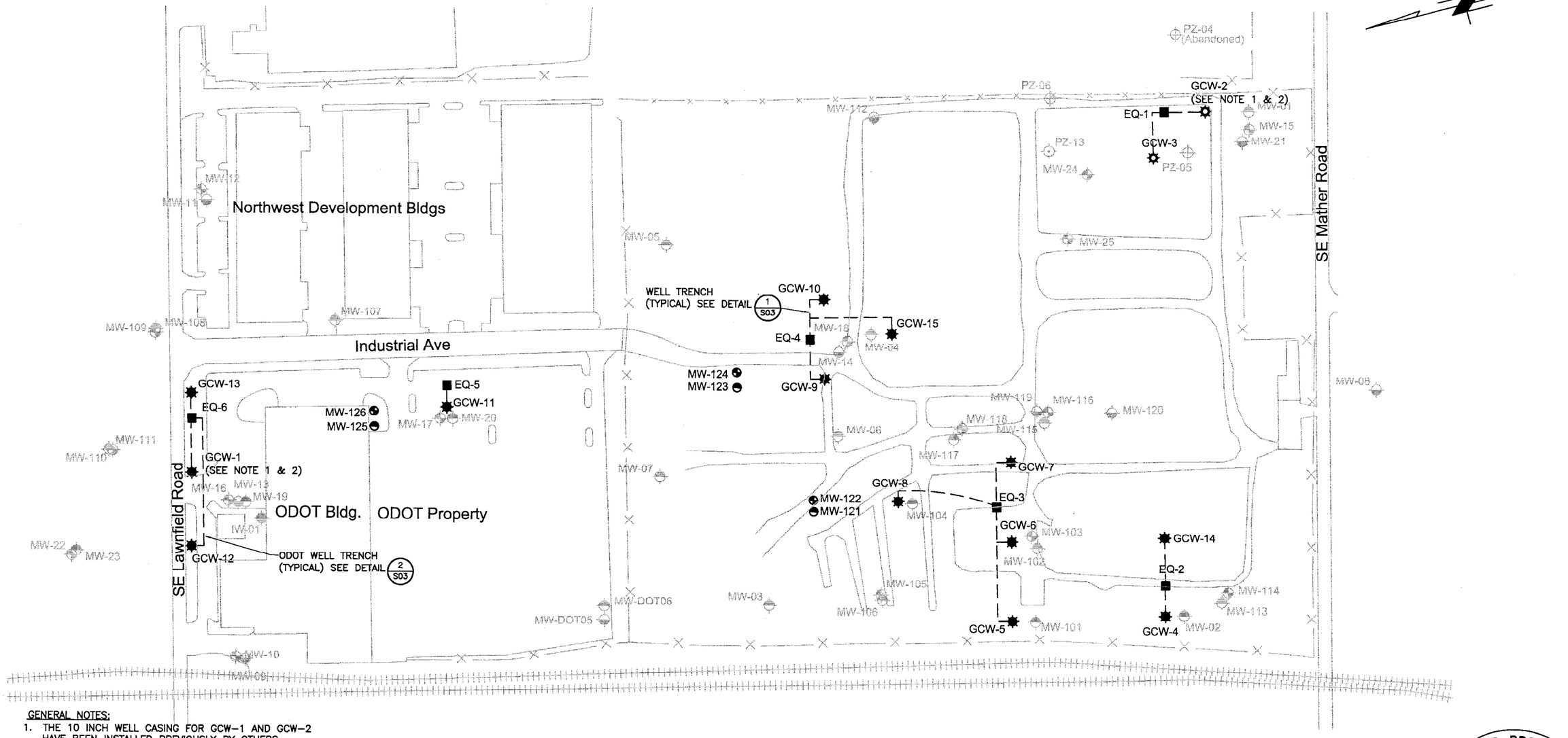

GENERAL NOTES:

1. THE 10 INCH WELL CASING FOR GCW-1 AND GCW-2 HAVE BEEN INSTALLED PREVIOUSLY BY OTHERS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE REMAINDER OF THE SYSTEM COMPONENTS AT LOCATIONS SHOWN.
2. EXISTING PIEZOMETERS ASSOCIATED WITH GCW-1 AND GCW-2 NOT SHOWN FOR CLARITY. SEE G03 FOR LOCATIONS.
3. TRENCH LINES ARE DIAGRAMATIC.
4. EQUIPMENT ENCLOSURE LOCATION IS APPROXIMATE AND MAY BE RELOCATED WITH ENGINEER APPROVAL.
5. EQ-6 SHALL OBSERVE THE CLACKAMAS COUNTY FRONT SETBACK FROM THE ROAD OF 20 FT.

200 0 200

SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER 10,216 OREGON SEPT. 15-92 TED WALL

EXPIRES: 6/30/04

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A	1/27/03	JMP	PRE-FINAL DESIGN SUBMITTAL

JOB No. 33754167.03000	DESIGNED: EIB	PROJ. ENGINEER: EIB	
SCALE: AS NOTED	DRAWN BY: JMP	APPROVED BY: TW	
	CHECKED BY: EIB	DATE: MARCH 2003	

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GCW & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

MONITORING WELL AND GCW SYSTEM LAYOUT (WITHOUT CAP)

DRAWING NUMBER:	
S01	
CAD FILE NUMBER:	
S01	
SHEET: 11 OF 17	REV. B

GENERAL NOTES

1. TO MINIMIZE SCALING, EQUIPMENT SHALL NOT PRODUCE APPRECIABLE HEAT INCREASE TO REINJECTED WATER.

2. THE BIOCIDE DOSING SYSTEM IS AN OPTION THAT MAY NEED TO BE ADDED AFTER SYSTEM START UP. IT IS NOT TO BE INSTALLED AS PART OF THIS SCOPE OF WORK. THE CONTRACTOR SHALL PROVIDE SUFFICIENT SPACE FOR A 55 GALLON DRUM WITHIN THE EQUIPMENT ENCLOSURE. CONTRACTOR'S PROPOSED SYSTEM CONFIGURATION SHALL ALLOW FOR FUTURE INSTALLATION OF BIOCIDE DOSING SYSTEM WITH MINIMAL SYSTEM ALTERATIONS.

3. CONTRACTOR SHALL PROVIDE BIOCIDE PIPING BETWEEN GCW AND ENCLOSURE.

4. THIS DRAWING IS DIAGRAMATIC WITH THE INTENT OF COMMUNICATING DESIRED OPERATION TO CONTRACTOR.

5. THE CONTRACTOR SHALL PROVIDE AN EQUIPMENT ENCLOSURE WITH APPROPRIATE LIGHTING AND ACCESS FOR MAINTENANCE OF EQUIPMENT. ENCLOSURE SHALL HAVE AT LEAST ONE STANDARD 110-V OUTLET.

6. THE CONTRACTOR MAY COMBINE COMPONENTS FOR SYSTEMS CONTAINED IN THE SAME EQUIPMENT ENCLOSURE SUCH THAT THE INTENDED OPERATION FOR EACH GCW IS MAINTAINED.

7. EQUIPMENT ENCLOSURES GREATER THAN 120 SQUARE FT WILL REQUIRE A CLACKAMAS COUNTY BUILDING PERMIT.

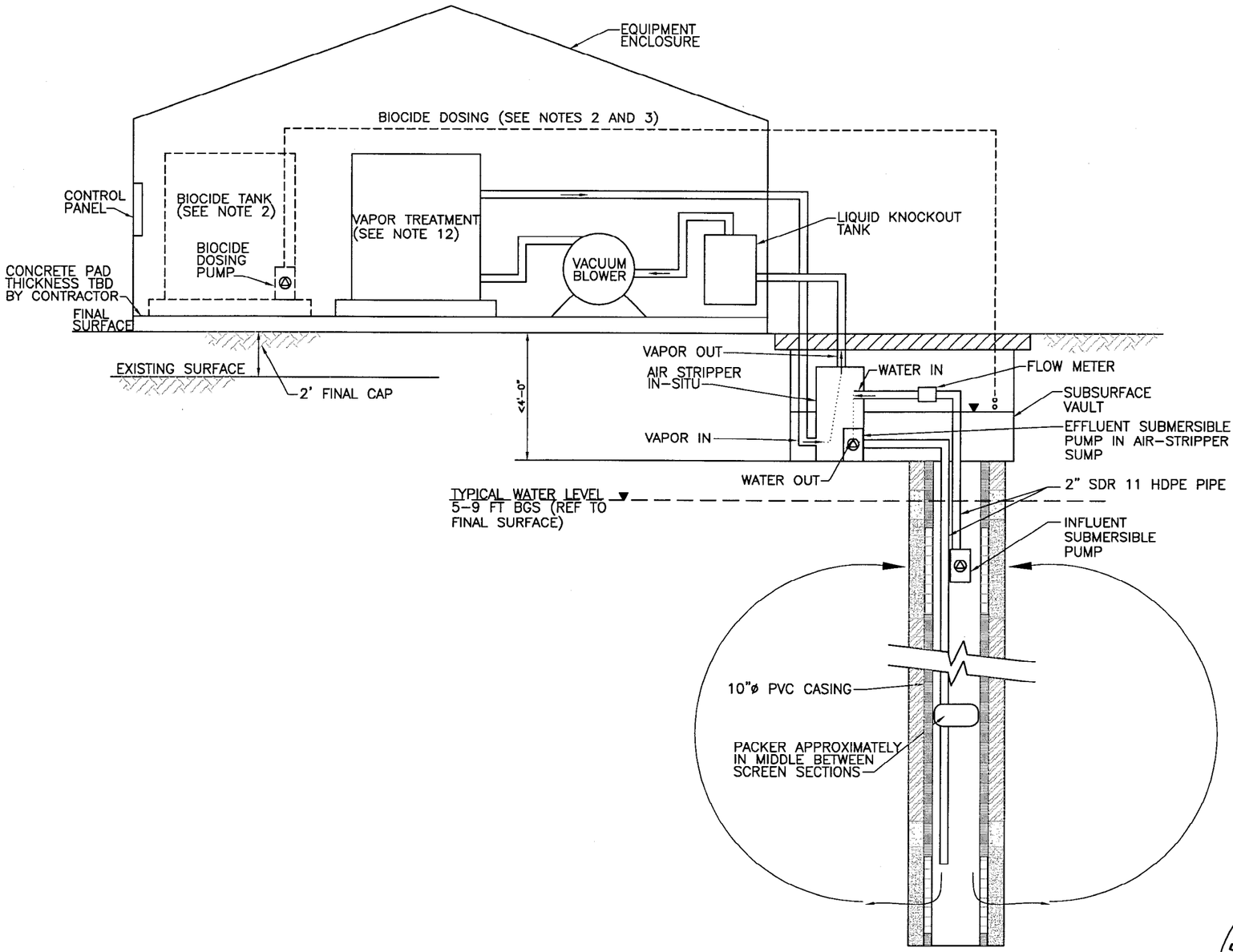
8. SAMPLE PORT LOCATIONS NOT SHOWN ON DRAWING ARE DESCRIBED IN SPECIFICATION SECTION 15101.2.4.

9. PRESSURE TEST POINT LOCATIONS NOT SHOWN ON DRAWING ARE DESCRIBED IN SPECIFICATION SECTION 15101.2.5.

10. PACKER SHALL HAVE INFLATION LINE WHICH WILL REMAIN IN WELL VAULT.

11. PACKER SHALL HAVE A GAS RELIEF LINE TO VENT AWAY GAS BUILD-UP BELOW THE PACKER. LINE WILL BE NORMALLY CLOSED WITH VALVE IN WELL VAULT.

12. CARBON AND ZEOLITE PER SPECIFICATION SECTION 11201.



PER TYPICAL GCW CONSTRUCTION DETAIL (SEE S03)

REGISTERED PROFESSIONAL ENGINEER 16,216 OREGON SEPT. 15-92 TED WALL

EXPIRES: 6/30/04

No.	DATE	BY	REVISION
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A	1/27/03	JMP	PRE-FINAL DESIGN SUBMITTAL

JOB No. 33754167.03000	DESIGNED: EIB	PROJ. ENGINEER: EIB	
SCALE: AS NOTED	DRAWN BY: JMP	APPROVED BY: TW	
	CHECKED BY: EIB	DATE: MARCH 2003	

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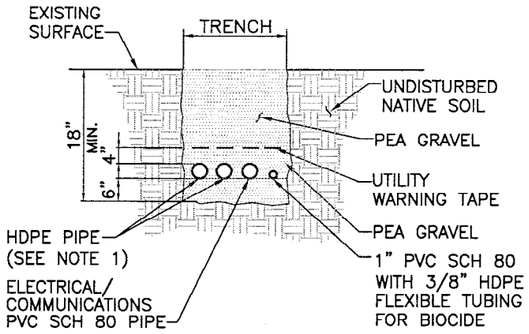
GCW & SOIL CAP REMEDIAL DESIGN

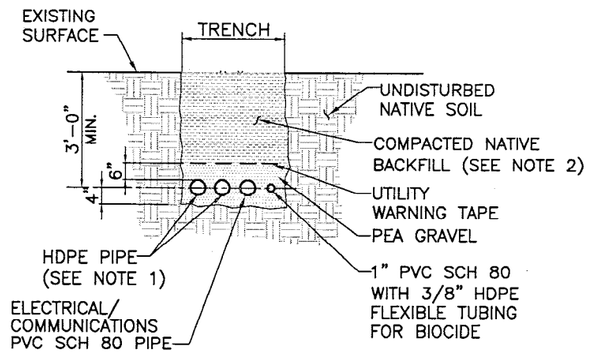
NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

GCW TREATMENT SYSTEM

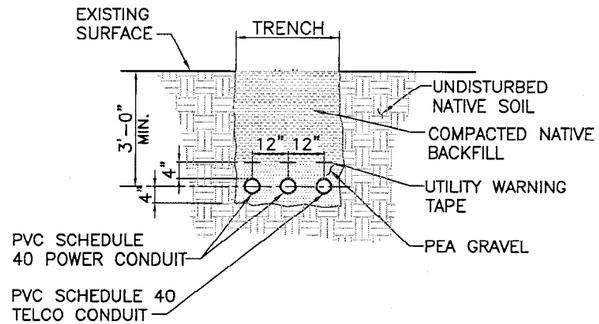
DRAWING NUMBER:	S02
CAD FILE NUMBER:	S02
SHEET:	12 OF 17
REV.	B



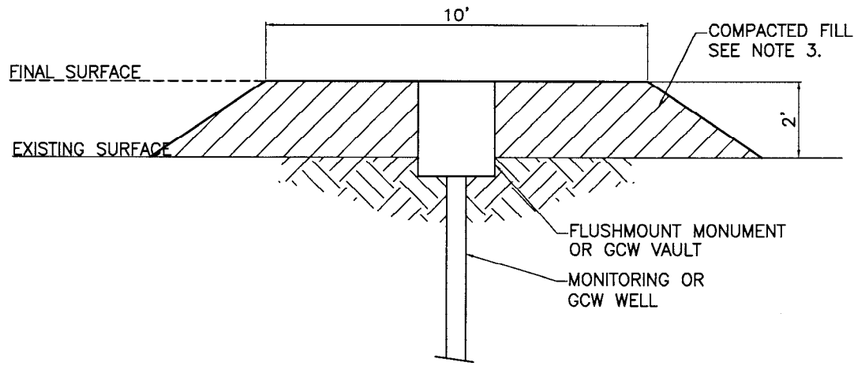
TYPICAL WELL TRENCH
N.T.S.
1 / S01



TYPICAL ODOT WELL TRENCH
N.T.S.
2 / S01



TYPICAL ELECTRICAL CONDUIT TRENCH
N.T.S.
3 / E01



GCW PAD DETAIL
N.T.S.
4 / —

NOTES:

1. ALL HDPE PIPE SHALL BE SLOPED TO DRAIN TO THE GCW WELLS.
2. ALL TRENCHES THAT CROSS UNDER DRIVEWAYS OR PARKING LOTS SHALL BE BACKFILLED WITH CONTROLLED DENSITY FILL MEETING ODOT SPECIFICATION 00442. THESE LOCATIONS SHALL BE RETURNED TO PRE-EXISTING CONDITIONS.
3. A PAD SHALL BE INSTALLED IN ANY GCW OR MONITORING WELL LOCATIONS WHERE THE 2' SOIL CAP HAS NOT BEEN PLACED. THE CONTRACTOR SHALL PROTECT WELLS BY PLACING A 10' DIAMETER SOIL PAD THAT IS 2' DEEP AND COMPACTED TO 90%.

REGISTERED PROFESSIONAL ENGINEER 16216 OREGON SEPT. 15-92 TED WALL

EXPIRES: 6/30/04

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JOB No. 33754167.03000	DESIGNED: EIB	PROJ. ENGINEER: EIB
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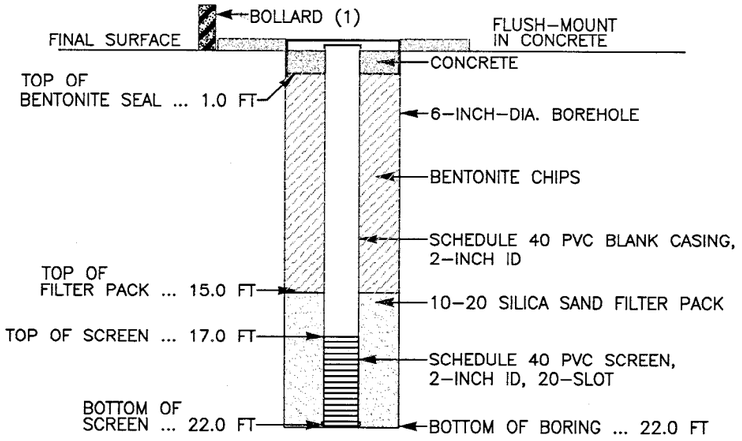
GCS & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

GCW DETAILS

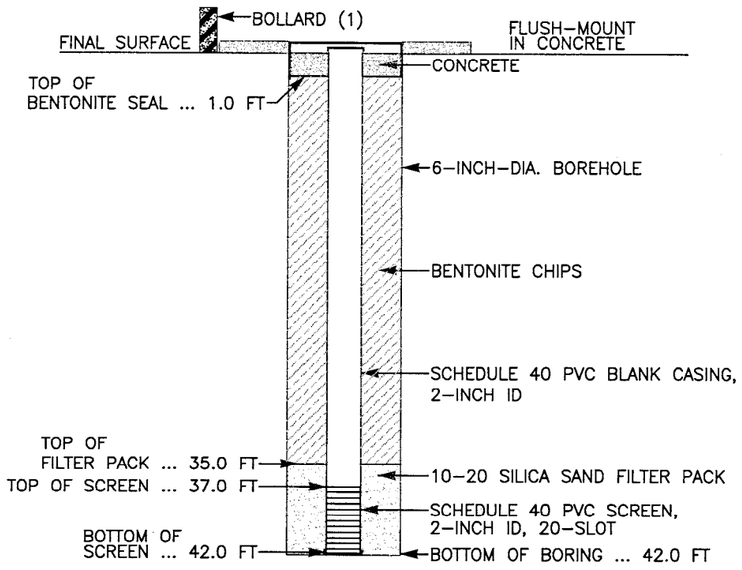
DRAWING NUMBER: S03
CAD FILE NUMBER: S03
SHEET: 13 OF 17
REV. B



TYPICAL SHALLOW MONITORING WELL

(22 FT BGS) CONSTRUCTION

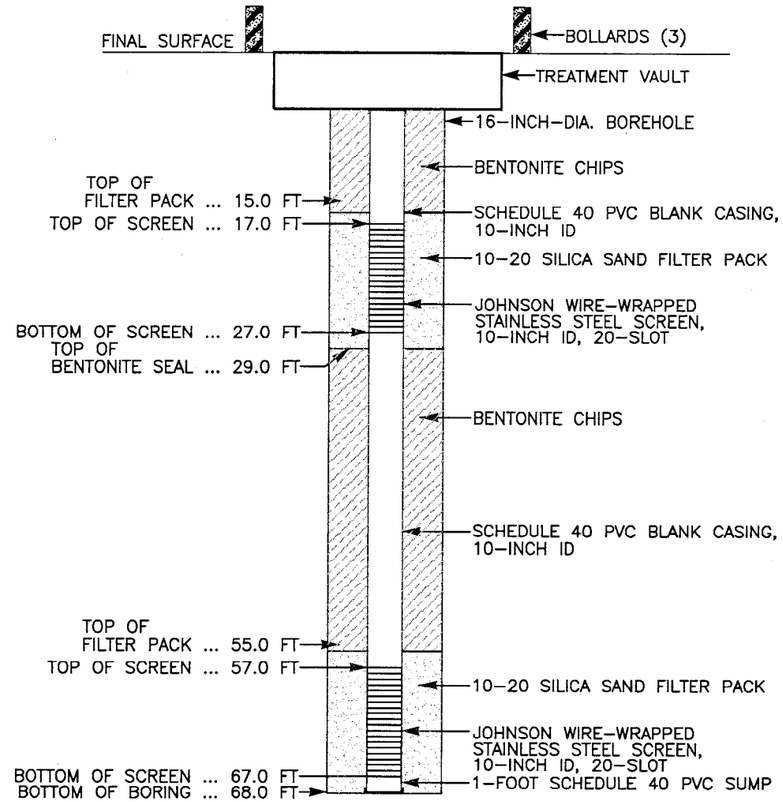
N.T.S.



TYPICAL INTERMEDIATE MONITORING WELL

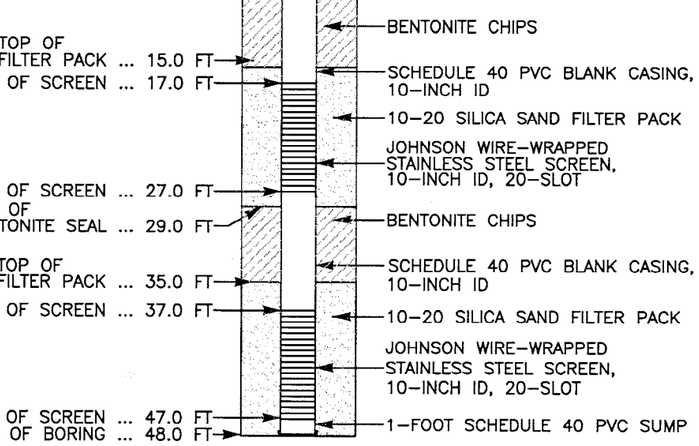
(42 FT BGS) CONSTRUCTION

N.T.S.



TYPICAL 67 FT GCW CONSTRUCTION

N.T.S.



TYPICAL 47-FT GCW CONSTRUCTION

N.T.S.

REGISTERED PROFESSIONAL ENGINEER 16,216 OREGON SEPT. 15-92 TED WALL

EXPIRES: 6/30/04

No.	DATE	BY	REVISION
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A	1/27/03	JMP	PRE-FINAL DESIGN SUBMITTAL

JOB No.	DESIGNED:	PROJ. ENGINEER:
33754167.03000	EIB	EIB
SCALE: AS NOTED	DRAWN BY: JMP	APPROVED BY: TW
	CHECKED BY: EIB	DATE: MARCH 2003

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GCS & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

WELL CONSTRUCTION DETAILS

DRAWING NUMBER:	
S04	
CAD FILE NUMBER: S04	
SHEET: 14 OF 17	REV. B

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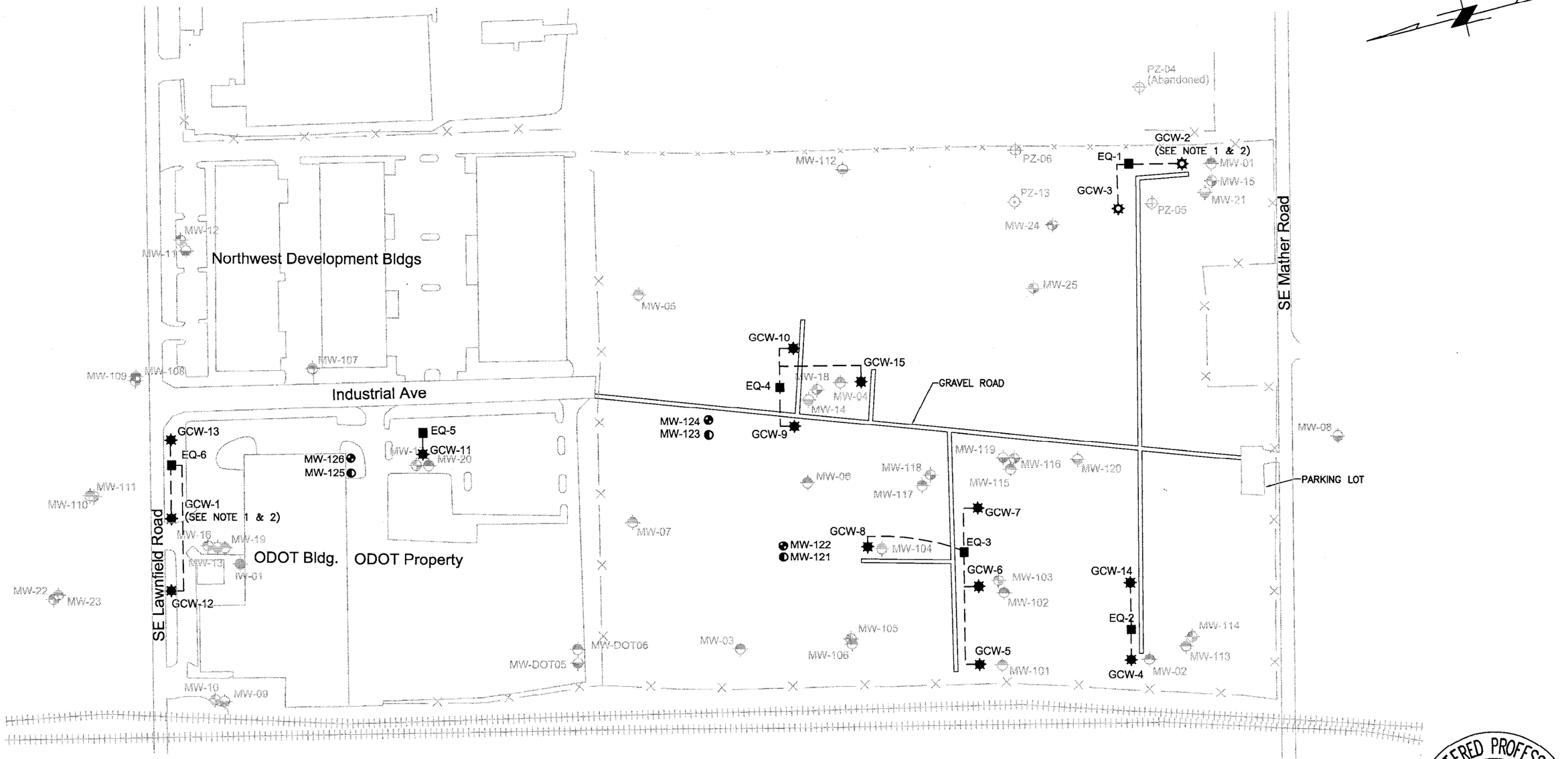

GENERAL NOTES:

1. THE 10 INCH WELL CASING FOR GCW-1 AND GCW-2 HAVE BEEN INSTALLED PREVIOUSLY BY OTHERS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE REMAINDER OF THE SYSTEM COMPONENTS AT LOCATIONS SHOWN.
2. EXISTING PIEZOMETERS ASSOCIATED WITH GCW-1 AND GCW-2 NOT SHOWN FOR CLARITY. SEE G03 FOR LOCATIONS.
3. TRENCH LINES ARE DIAGRAMATIC.

REGISTERED PROFESSIONAL ENGINEER 16,216 OREGON SEPT. 15-92 TED WALL

EXPIRES: 6/30/04

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A	1/27/03	JMP	PRE-FINAL DESIGN SUBMITTAL

JOB No. 33754167.03000	DESIGNED: EIB	PROJ. ENGINEER: EIB	
SCALE: AS NOTED	DRAWN BY: JMP	APPROVED BY: TW	
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GCW & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING / HALL PROCESS COMPANY

MONITORING WELL & GCW SYSTEM LOCATIONS (WITH CAP)

DRAWING NUMBER: S05
CAD FILE NUMBER: S05
SHEET: 15 OF 17
REV. B

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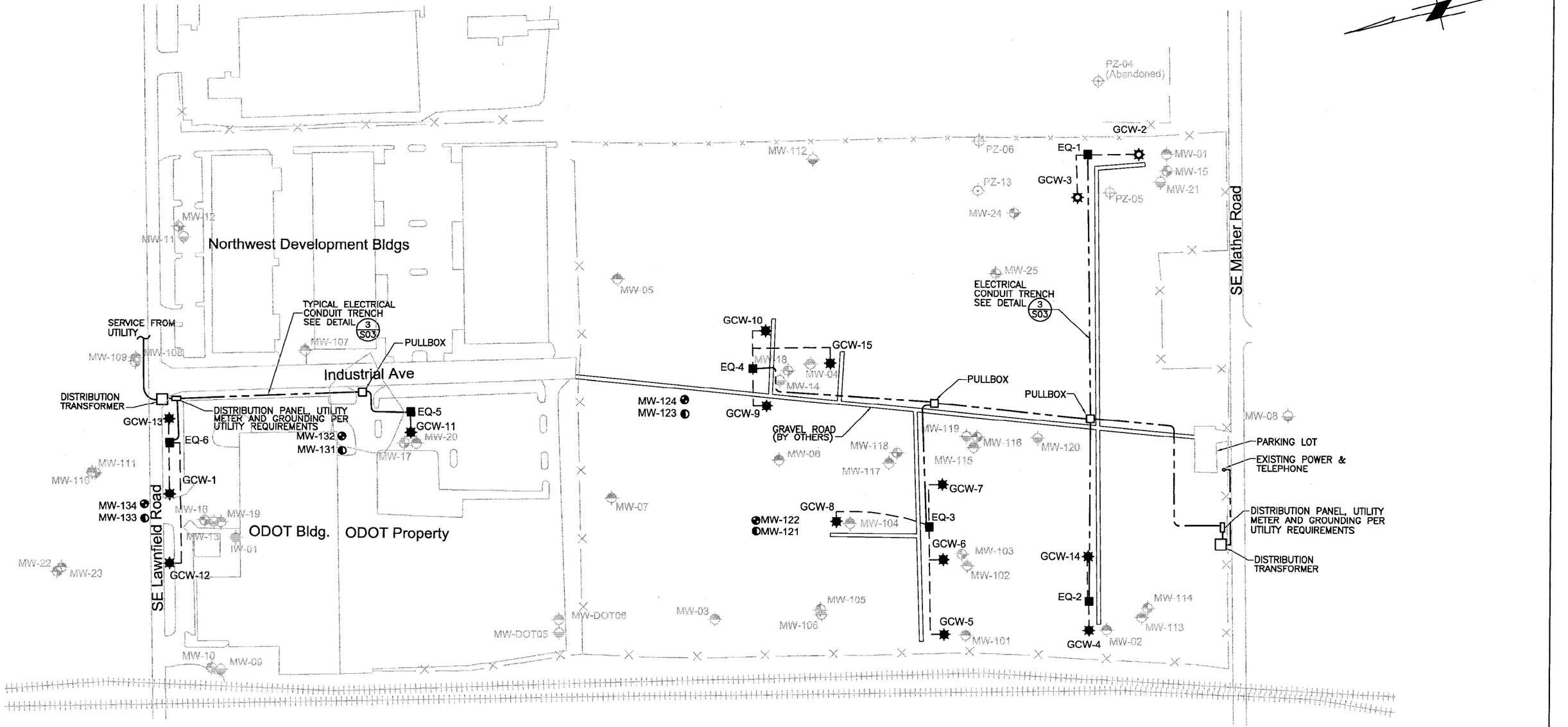

NOTES:

1. REFER TO SPECIFICATION FOR DETAIL INFORMATION AND OPERATION SEQUENCE FOR THE SYSTEM.
2. CONTRACTOR SHALL PREPARE AN ELECTRICAL DESIGN BY AN OREGON REGISTERED ELECTRICAL PROFESSIONAL ENGINEER WITH SUFFICIENT DETAIL TO OBTAIN ALL ELECTRICAL PERMITS AND APPROVALS.
3. ALL CONDUIT UNDER ROADWAYS SHALL BE SCHEDULE 80.

LEGEND

WELL TRENCH — — — —
U/G CONDUIT — — — —

200 0 200

SCALE IN FEET

NOT FOR CONSTRUCTION

No.	DATE	BY	REVISION
B	3/21/03	JMP	FINAL DESIGN SUBMITTAL
A	1/27/03	JMP	PRE-FINAL DESIGN SUBMITTAL

JOB No.: 33754167.03000	DESIGNED: TK	PROJ. ENGINEER: EIB
SCALE: AS NOTED	DRAWN BY: BJR	APPROVED BY: TW
	CHECKED BY: TK	DATE: MARCH 2003

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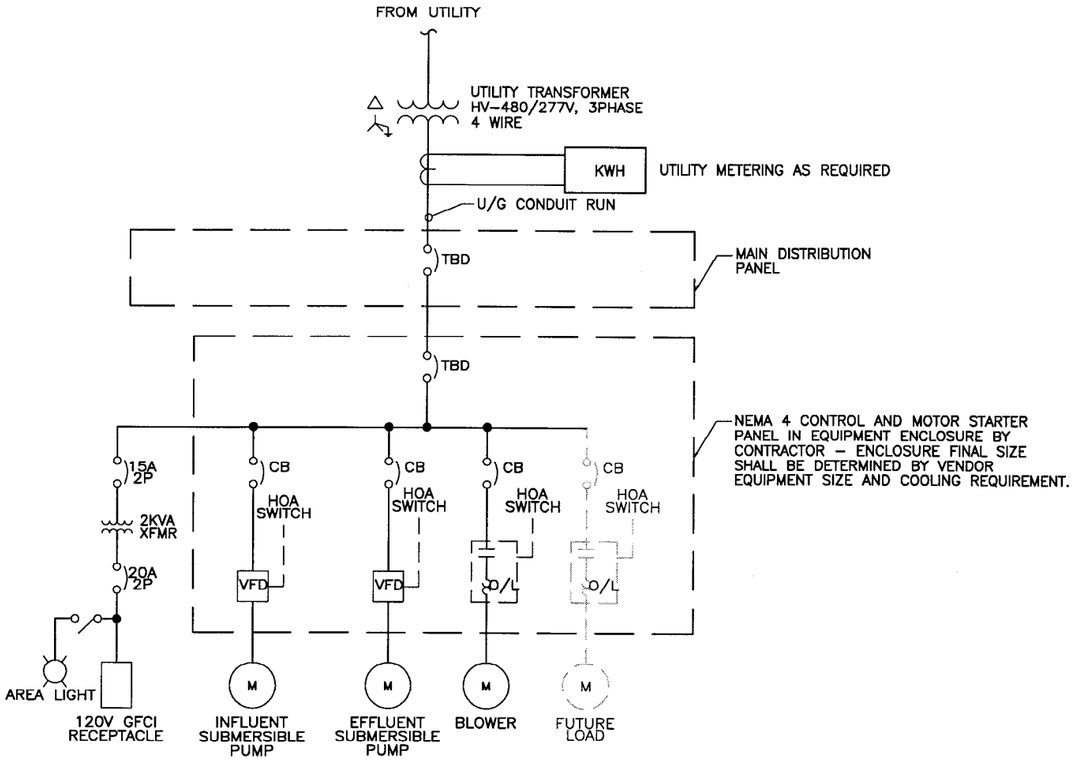
GCW & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING/HALL PROCESS COMPANY

UNDERGROUND POWER AND TELEPHONE SITE PLAN

DRAWING NUMBER:	
E01	
CAD FILE NUMBER:	
E01	
SHEET: 16 OF 17	REV. B



TYPICAL WELL SINGLE-LINE DIAGRAM
N.T.S.

NOTE:

1. ONE LINE DIAGRAM IS TYPICAL FOR A SINGLE GCW SYSTEM. CONTRACTOR MAY ELECT TO COMBINE THE CONTROL PANELS FOR MULTIPLE SYSTEMS IN THE SAME EQUIPMENT ENCLOSURE, BUT SHALL ALSO SUBMIT DETAILS FOR ANY PROPOSED CHANGES.
2. FOR ILLUSTRATIVE PURPOSES ONLY. CONTRACTOR TO COMPLETE ELECTRICAL DESIGN. FOR GCW SEQUENCE OF OPERATION DESCRIPTION SEE SPECIFICATION SECTION 11201.

NOT FOR CONSTRUCTION

No.	DATE	BY	REVISION
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A	1/27/03	JMP	PRE-FINAL DESIGN SUBMITTAL

JOB No. 33754167.03000 | DESIGNED: TK | PROJ. ENGINEER: EIB
SCALE: AS NOTED | DRAWN BY: BJR | APPROVED BY: TW
CHECKED BY: TK | DATE: MARCH 2003

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GCW & SOIL CAP REMEDIAL DESIGN

NORTHWEST PIPE & CASING/HALL PROCESS COMPANY

ELECTRICAL ONE LINE DIAGRAM

DRAWING NUMBER: E02
CAD FILE NUMBER: E02
SHEET: 17 OF 17
REV. B